

**What is claimed is :**

1. A system for RF gain control comprising:
  - a receiver for receiving a RF signal;
  - 5 a signal-sampling device, coupled to the receiver, for retrieving a signal strength information from the RF signal;
  - a noise-sampling device, coupled to the receiver, for retrieving a noise information from the RF signal; and
  - 10 an operation unit, coupled to the receiver, the signal-sampling device and the noise-sampling device, for generating a feedback control signal according to the signal strength and noise informations, wherein the operation unit provides the feedback control signal to the receiver to adjust a gain value thereof.
- 15 2. The system of claim 1, wherein the operation unit couples the signal strength and noise informations to generate the feedback control signal.
3. The system of claim 1, further comprising:
  - 20 a detector, coupled to the receiver, for detecting a time interval between two contiguous frames in the RF signal and for generating a detection information; and
  - a first processor, coupled to the detector and the noise-sampling device, for generating a noise-sampling instruction according to the detection information to retrieve the noise information from the RF signal.
- 25 4. The system of claim 3, wherein the frames are selected from a group consisting of request to send frame, clear to send frame, acknowledgement frame, data frame, beacon frame, poll frame, data plus poll frame, data plus acknowledgement frame, and data plus acknowledgement plus poll frame.
- 30 5. The system of claim 3, wherein the time interval corresponds to a short inter-frame space.

6. The system of claim 3, wherein the noise-sampling instruction is a noise gate.
7. The system of claim 3, wherein if the receiver is in a state of not receiving data, the first processor inhibits the noise-sampling instruction to disable the noise-sampling device.
8. The system of claim 3, wherein if the receiver is in a state of not receiving data, the first processor suspends to generate the noise-sampling instruction to disable the noise-sampling device.
9. The system of claim 3, wherein the first processor is further coupled to a transmitter, and when the transmitter is in a state of transmitting data, the first processor inhibits the noise-sampling instruction to disable the noise-sampling device.
10. The system of claim 3, wherein the first processor is further coupled to a transmitter, and when the transmitter is in a state of transmitting data, the first processor suspends to generate the noise-sampling instruction to disable the noise-sampling device.
11. The system of claim 1, further comprising:  
a second processor, coupled to the signal-sampling device and the noise-sampling device, for generating a signal quality information according to the signal strength and noise informations.
12. The system of claim 11, wherein the signal quality information is a signal-to-noise ratio.
13. A method for gain control comprising:  
receiving a RF signal;  
retrieving a signal strength information from the RF signal;  
retrieving a noise information from the RF signal; and  
adjusting a gain value according to the signal strength and noise informations.
14. The method of claim 13, wherein the noise information is retrieved from a short inter-frame space in the RF signal.

15.The method of claim 13, further comprising:

generating a signal quality information according to the signal strength and noise informations.

5 16.The method of claim 15, wherein the signal quality information is a signal-to-noise ratio.